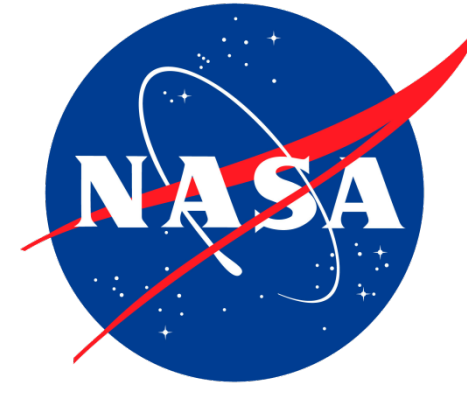




W-2. Exporting VIIRS and MODIS Products for Visualization using Polar2Grid

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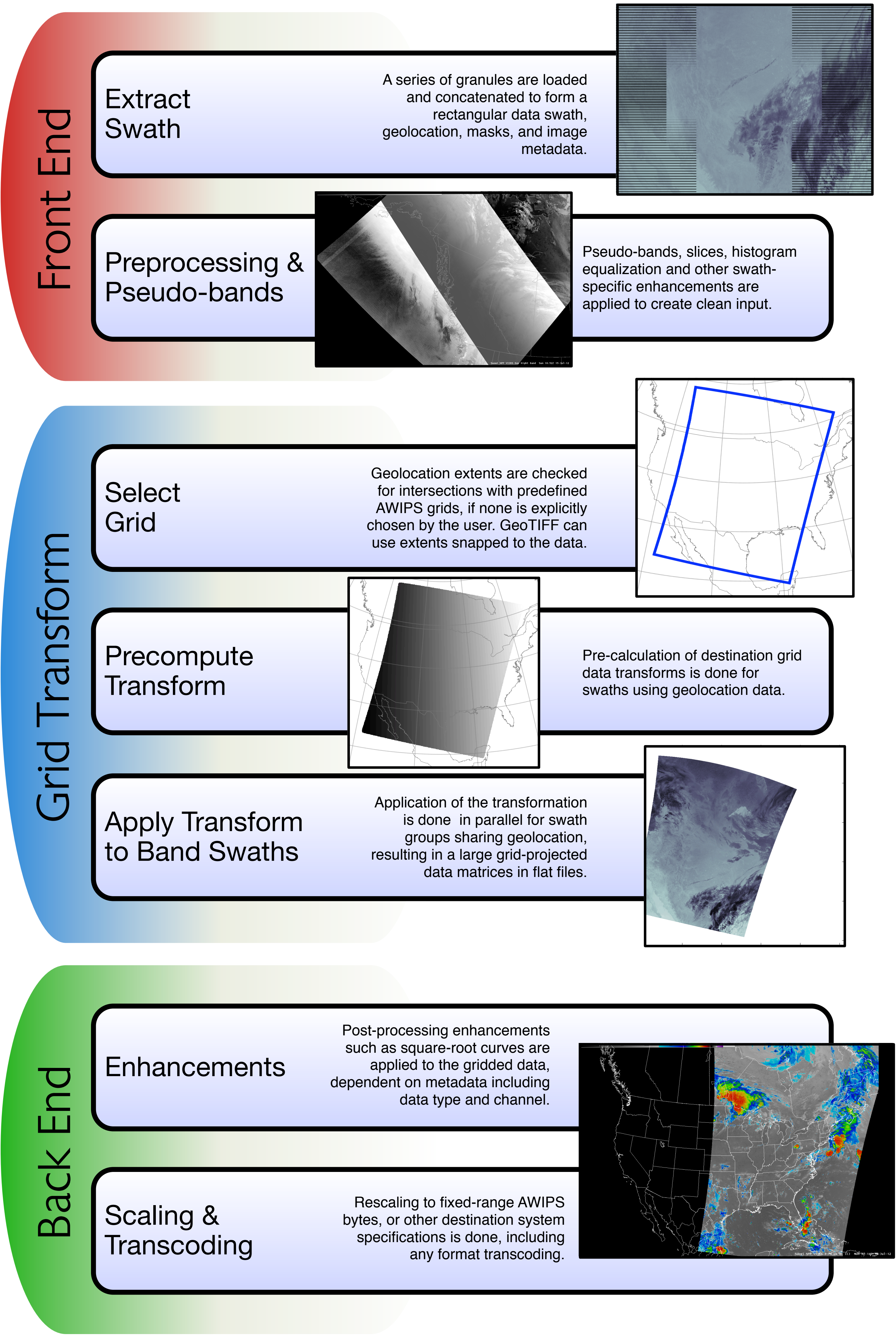


Abstract

Polar-orbiting multi-band meteorological sensors such as VIIRS and MODIS pose substantial challenges for taking imagery “the last mile” to forecast offices, scientific analysis environments, and the general public. To do this quickly and easily, the Cooperative Institute for Meteorological Satellite Studies (CIMSS) at the University of Wisconsin has created an open-source, modular application system, Polar2Grid. This bundled solution automates tools for converting VIIRS and MODIS products into a variety of output formats, including GeoTIFF and AWIPS, as well as NinJo forecasting workstation formats. Polar2Grid includes perceptual enhancements for products such as the VIIRS Day-Night Band (DNB), and performs conversions and projections in seconds on large swaths of data. Polar2Grid is currently providing VIIRS imagery over the Continental United States, as well as Alaska and Hawaii, from various Direct-Broadcast antennas to forecasters at the NOAA National Weather Service (NWS) offices in their AWIPS terminals, within minutes of an overpass of the Suomi NPP satellite. This data has proven useful in the issuance of forecasts by the NWS.

Polar2Grid Software Processing Chain

Polar2Grid is partitioned into three major segments: a FrontEnd which abstracts away the specifics of a given instrument and provides well-conditioned swaths and geolocation; a reusable transformation core using a variety of algorithms and implementations to convert swaths to grids; and a BackEnd which converts the gridded data to display ranges and exports in destination-system file formats.



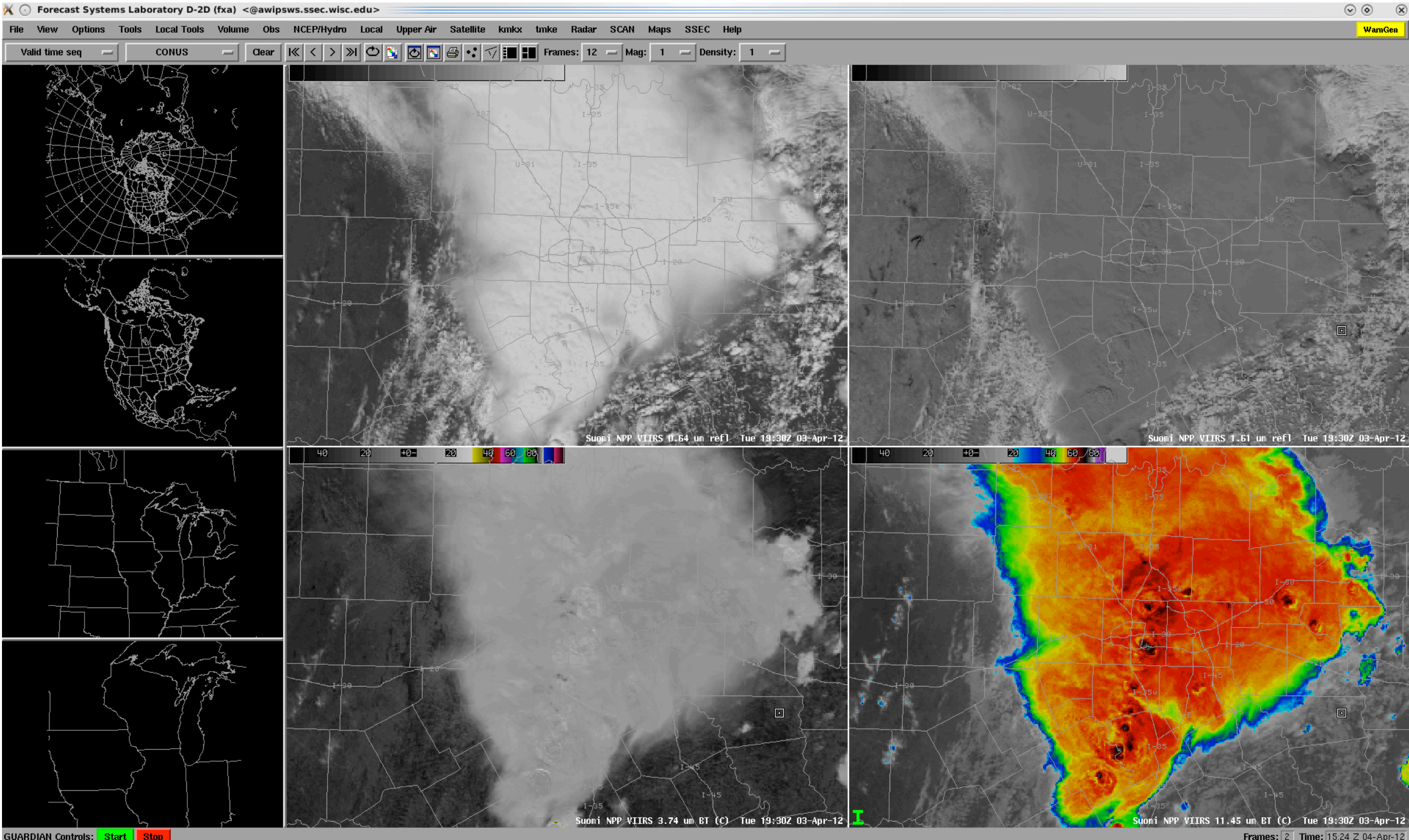
FrontEnd & BackEnd Modules

Module	Capability	Status
VIIRS SDR Front End	VIIRS M, I, DNB with enhancements	stable
MODIS Front End	Funded by NASA, BTemp / Reflectances	beta
VIIRS CREFL Front End	Corrected Reflectance product for true-color	in development
CrIS SDR Front End	Brightness Temperature Slices	in development
CSPP CrIS EDR Front End	Surface parameters, T / WV layers	in development
AWIPS NetCDF Back End	NetCDF files, ready for AWIPS injection	stable
NinJo TIFF Back End	DWD contributed feature for VIIRS in NinJo	stable
GeoTIFF Back End	Export to localized GeoTIFF images	stable

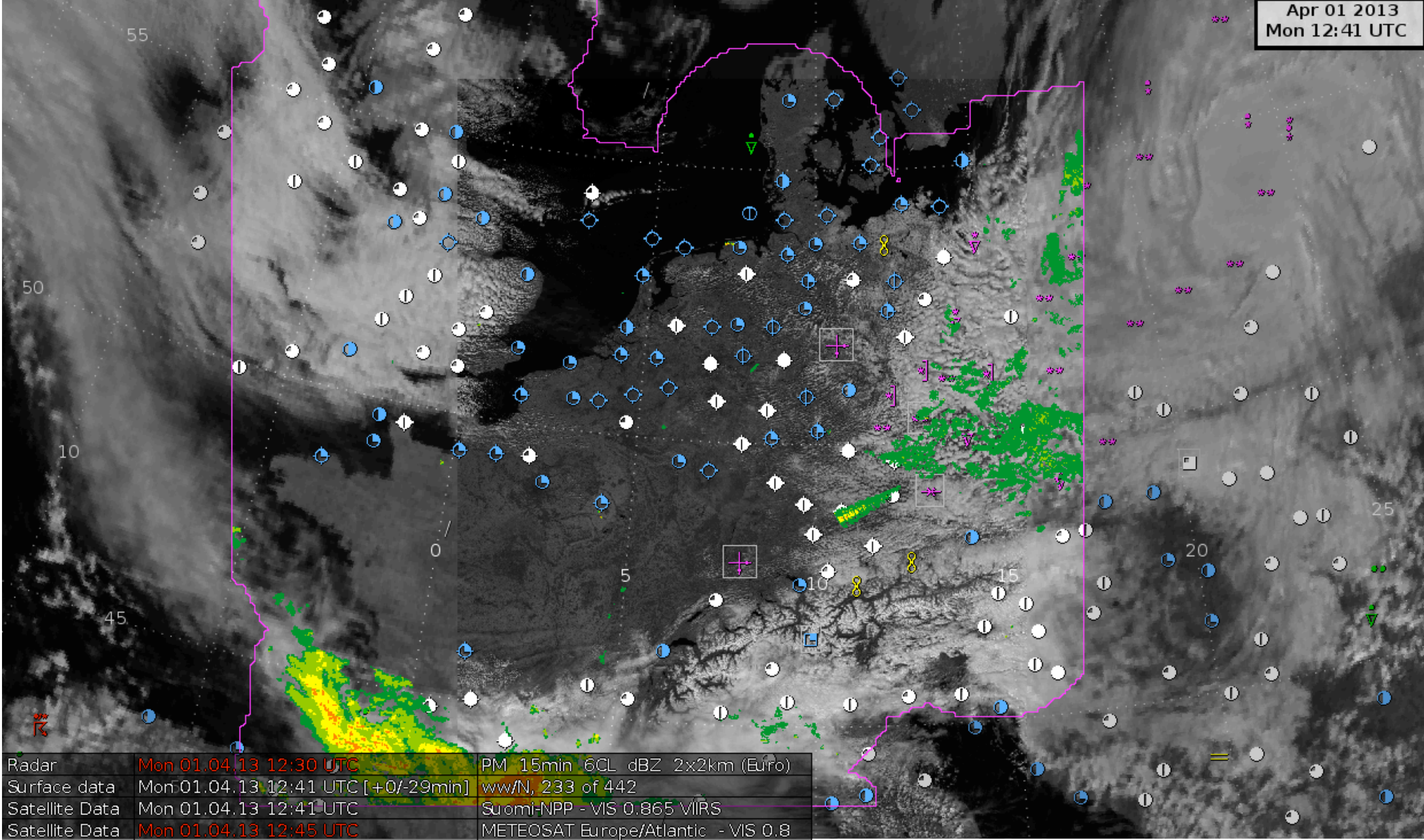
Acknowledgment and thanks to NOAA and NASA for supporting this development effort.

Examples

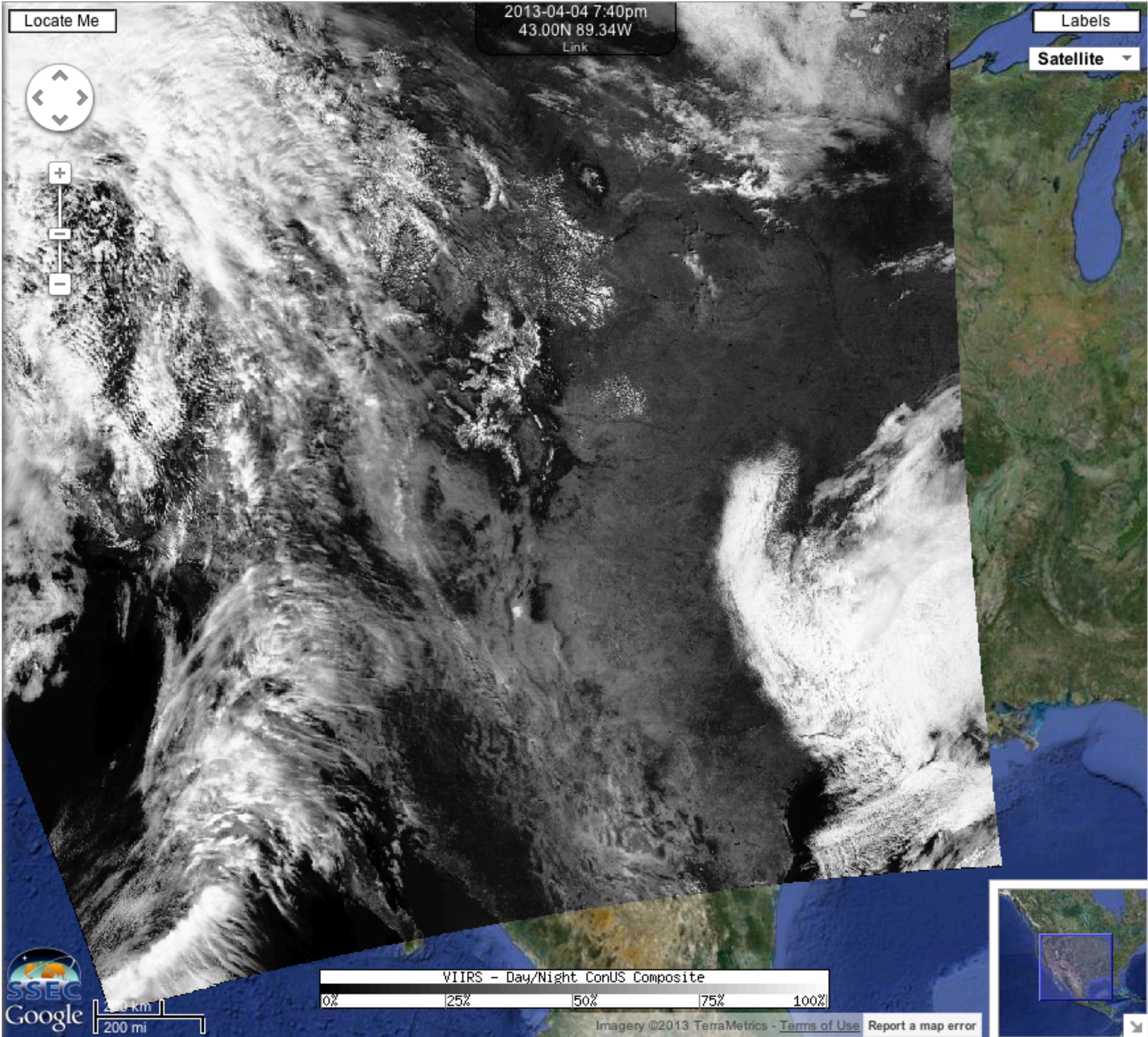
VIIRS multi-band over TX in AWIPS



NinJo, courtesy Katja Hungershofer @ DWD



VIIRS Day-Night Band in WMS.ssec.wisc.edu, courtesy S. Batzli & R. Dengel



Fork Polar2Grid @ GitHub!

<https://github.com/davidh-ssec/polar2grid>

Polar2Grid is built in the Python scripting language, using open-source software including MS2GT, GDAL, libtiff, PROJ.4, numpy, and matplotlib. Community users are welcome to download ready-to-run Linux binary bundles, or build it from scratch on their own systems. Contributors can use github to obtain the full source repository, implement and share new capabilities, and request their integration into future releases. Developer documentation is at <http://www.ssec.wisc.edu/software/polar2grid/index.html>.

The ready-to-run linux binary bundle can be found at <http://cimss.ssec.wisc.edu/cspp/>